

Title: REEF FISH COMMUNITY DYNAMICS AND LINKAGES WITH FLORIDA BAY.

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Project Summary: This proposal will continue providing critical data for testing management hypotheses and assessing any effects of Everglades Restoration on coral reef fish communities. Coral reefs and reef fishes are important to people and are downstream performance indicators of Everglades Restoration. Because reef fishes are at higher trophic levels, they are the ultimate downstream integrators of habitat and functional changes in the Florida Bay and the Keys' coastal marine ecosystem. Since many exploited reef species directly use Florida Bay as critical settlement and nursery habitats, any changes in the Florida Bay environment will result in changes in recruitment, growth, and mortality that will affect reef fish species composition and population abundance, size, and distribution. Our previous research has developed a state-of-the-art sampling strategy, established baseline conditions for assessing future changes in the Florida Keys, and demonstrated the influence of fishing on reef community composition. This research will continue to monitor and quantify coral reef fish community changes to achieve the following goals:

1. Provide intensive and precise spatial and habitat specific fishery-independent visual census assessment of the reef fish communities across the range of reef fish habitats in the Florida Keys for 2004-5.
2. Continue documenting trends in reef fish size and abundance within and outside no-take zones in the Florida Keys to spatially assess and quantify impacts of fishing and other extractive activities.
3. Test specific hypotheses predicting continuing changes in reef fish communities as the result of no-take protection started in 1997 over intermediate time scales (7-8 years).
4. Provide a precise and spatially explicit database for assessing any future reef fish population changes resulting from Everglades Restoration.
5. Provide managers options for optimizing long-term survey design

strategies to identify reef fish population changes that are precise and cost-effective.

6. Correlate the linkages between reef fish communities and fishing, habitat, oceanographic and other physical processes to guide appropriate experimental studies on dynamic mechanisms and to develop predictive models.

Research will continue to evaluate changes and experimentally test specific hypotheses concerning no-take zone protection used in the Florida Keys National Marine Sanctuary (FKNMS). Our previous research has shown rapid changes in FKNMS no-take zones during the first 5 years following the 1997 fishing ban. Elucidating the impacts of fishing is essential because fishing can potentially compound, dominate, or synergistically interact with other environmental influences.

Relevance to
Restoration and/or
Resource
Management:

Quantifying changes in reef fish communities on a spatially explicit basis is critical for assessing future impacts of Everglades Restoration and changes in Florida Bay on Florida coral reefs.

Geographic Area:

Florida Bay and Florida Keys.